

What is claimed is:

1. In a network constituted with a multi-stage connection of a plurality of wavelength division multiplex (WDM) transmission equipment, each having a receiving amplifier amplifying a WDM signal received from a preceding station, and a transmitting amplifier outputting a WDM signal to a succeeding station, a gain setting method for the receiving amplifier comprising:

detecting the necessity of gain setting of the receiving amplifier when the power of the receiving amplifier is turned on,

requesting WDM transmission equipment in the preceding station to output ASE light;

in the WDM transmission equipment of the preceding station, based on the request for ASE light output, shutting off both passing-through light and added light, and outputting the ASE light corresponding to a predetermined number of wavelengths of signal light;

in the receiving amplifier of the WDM transmission equipment in the station of interest, performing the gain setting by use of the ASE light; and

on completion of the gain setting, in the WDM transmission equipment of the station of interest, shifting to receive an optical signal, and in the WDM transmission equipment of the preceding station, switching over to optical signal output.

2. In a network constituted with a multi-stage connection of a plurality of wavelength division multiplex (WDM) transmission equipment, each having a receiving amplifier amplifying a WDM signal received from a preceding station, and a transmitting amplifier outputting a WDM signal to a succeeding station, a gain setting method for the receiving amplifier comprising:

detecting the necessity of gain setting of the receiving amplifier at the time of either restoration from a break or replacement of the fiber connecting the WDM transmission equipment sets, and requesting WDM transmission equipment in the preceding station to output ASE light;

in the WDM transmission equipment of the preceding station, based on the request for ASE light output, shutting off both passing-through light and added light, and outputting the ASE light corresponding to a predetermined number of wavelengths of signal light;

in the receiving amplifier of the WDM transmission equipment in the station of interest, performing the gain setting by use of the ASE light; and

on completion of the gain setting, in the WDM transmission equipment of the station of interest, shifting to receive an optical signal, and in the WDM transmission equipment of the preceding station, switching over to optical signal output.

3. The gain setting method for the receiving amplifier
in the WDM transmission equipment according to claim 1,
wherein the ASE light corresponding to the
predetermined number of wavelengths of the signal light
5 is ASE light corresponding to one wavelength of the signal
light.

4. The gain setting method for the receiving amplifier
in the WDM transmission equipment according to claim 2,
10 wherein the ASE light corresponding to the
predetermined number of wavelengths of the signal light
is ASE light corresponding to one wavelength of the signal
light.

15 5. The gain setting method for the receiving amplifier
in the WDM transmission equipment according to claim 1,
wherein each plurality set of WDM transmission
equipment comprises a network element which overall
controls each WDM transmission equipment set, and at the
20 time of turning on the power of the receiving amplifier
in the WDM transmission equipment of the station of interest,
the network element in the station of interest detects the
necessity of the gain setting of the receiving amplifier.

25 6. The gain setting method for the receiving amplifier
in the WDM transmission equipment according to claim 2,
wherein each plurality set of WDM transmission

equipment comprises a network element which overall controls each WDM transmission equipment set, and at the time of turning on the power of the receiving amplifier in the WDM transmission equipment of the station of interest, 5 the network element in the station of interest detects the necessity of the gain setting of the receiving amplifier.

7. The gain setting method for the receiving amplifier in the WDM transmission equipment according to claim 1, 10 wherein the shutoff of the passing-through light and the added light is performed by closing a shutter disposed on the input side of the transmitting amplifier.

8. The gain setting method for the receiving amplifier 15 in the WDM transmission equipment according to claim 2, wherein the shutoff of the passing-through light and the added light is performed by closing a shutter disposed on the input side of the transmitting amplifier.

20 9. The gain setting method for the receiving amplifier in the WDM transmission equipment according to claim 7, wherein, when outputting the ASE light, the transmitting amplifier in the preceding station supervises a condition of the shutter disposed on the input side of 25 the transmitting amplifier, and on occurrence of a malfunction, the malfunction is reported to a maintenance person.

10. The gain setting method for the receiving amplifier in the WDM transmission equipment according to claim 8,

5 wherein, when outputting the ASE light, the transmitting amplifier in the preceding station supervises a condition of the shutter disposed on the input side of the transmitting amplifier, and on occurrence of a malfunction, the malfunction is reported to a maintenance
10 person.

11. The gain setting method for the receiving amplifier in the WDM transmission equipment according to claim 1,

15 wherein, in the WDM transmission equipment of the station of interest, a stable condition of the ASE light output of the transmitting amplifier in the preceding station is supervised, and on detection of an unstable condition of the transmitting amplifier in the preceding
20 station while the gain setting of the receiving amplifier is being performed in the station of interest, the gain setting of the receiving amplifier in the station of interest is canceled, and after detecting a stable condition of the ASE light output of the transmitting
25 amplifier in the preceding station, the gain setting of the receiving amplifier in the station of interest is performed afresh.

12. The gain setting method for the receiving amplifier in the WDM transmission equipment according to claim 2,

5 wherein, in the WDM transmission equipment of the station of interest, a stable condition of the ASE light output of the transmitting amplifier in the preceding station is supervised, and on detection of an unstable condition of the transmitting amplifier in the preceding
10 station while the gain setting of the receiving amplifier is being performed in the station of interest, the gain setting of the receiving amplifier in the station of interest is canceled, and after detecting a stable condition of the ASE light output of the transmitting
15 amplifier in the preceding station, the gain setting of the receiving amplifier in the station of interest is performed afresh.